Sam Laing

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Personal Statement

Machine Learning Engineer with 2+ years' experience deploying ML systems in fintech (invoice automation, fraud detection and time series forecasting) and research expertise in optimization and transformer based architectures. Skilled at bridging deep learning research with scalable production systems, with hands-on experience in building end-to-end ML pipelines, model development and deployment. Holds a MSc in Computer Science and a bachelors in pure and applied Mathematics Seeking opportunities to apply ML expertise in end-to-end system development and research-driven production solutions.

Professional Skills

Programming Languages: Python, C++, SQL, R

ML Tools: PyTorch, JAX, WandB, Torch Lightning, Numpy, Pandas, Scikit-learn, Optuna,

Infrastructure: Azure, SLURM, FastAPI, Git, GitLab, Linux

Experience

ELLIS Institute/Max Planck Institute Tübingen, Germany

Research Engineer *Sep 2025 – Present*

- Researching methods to enhance the pre-training of GPT-style language models, targeting both improvements in training efficiency and the foundational understanding of the optimization process.
- Particularly interested in understanding the Muon optimizer and it's advantages over adaptive methods

SoftCo Dublin, Ireland

Machine Learning Engineer *May 2023 – April 2025, Part-time*

- Developed and deployed a Bayesian invoice-matching module, enabling 95%+ touchless processing and automating a significant portion of AP services. This solution enhanced sales by demonstrating high auto-match rates during customer onboarding, leading to increased customer acquisition and significant cost savings for clients.
- Developed and deployed a Random Forrest model as part of a product automating invoice coding to eliminate manual effort for customers. The project involved multi-label classification task with a large number of classes.
- Implemented data parsers and contributed to an Azure-based ETL pipeline to support model training workflows.
- Produced comprehensive documentation to ensure clarity and reproducibility working within Agile framework

University Of Tübingen Tübingen, Germany

Research Assistant *May 2024 - September 2024*

- Researched the effectiveness of soft label datasets in improving the calibration and robustness of deep neural networks, comparing their utility against regularization techniques such as MixUp, Manifold MixUp, CutMix, and Dropout in distance-aware networks like SNGP, DUQ, and Mahalanobis Distance. (Github Repository)

Education

University of Tuebingen Germany

MSc. in Machine Learning; ***Grade 1.3 (sehr gut)*** *Oct 2022 – July 2025*

Master's Thesis: Fundamental research into adaptive and second-order optimizers (in particular, Muon) for transformer-based pretraining efficiency and understanding training dynamics. Supervised by Dr. Antonio Orvieto

Trinity College Dublin Ireland

BA Mathematics; ***First Class Honors*** *Sep 2018 – Jun 2022*

Bachelor Thesis: Applied category theoretical techniques (in particular model categories) to prove several fundamental theorems of algebraic topology. Supervised by Dr Jack Kelly

Awards & Achievements

Trinity College Academic Gold Medal: Awarded for academic excellence throughout 4 years of study

William Hasslett Memorial Prize: Awarded to the St Andrew's College student with the best high school grades and attending Trinity College (in the Leaving Certificate Examinations) (2017)

References

Susan Spence, Co-founder SoftCo & Manverton (email)

Neil Kelly, Product Manager SoftCo (email)